**2007 CARB TSA Findings**

| Finding | Recommendation | Status |
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| **M1-M3:** The ARB Primary Quality Assurance Organization does not meet the requirements in 40 CFR Part 58, Appendix A, Section 3.1 for its dependent Districts. | • Identify a primary monitoring point of contact for each non-ARB district ('District') within the ARB PQAO. | This has been completed. |
| | • Provide Districts with SOPs, calibration spreadsheets, data review procedures, maintenance forms and technical bulletins for FRM and FEM analyzers and samplers operated by the ARB. These will be updated annually. | Accessible via the web. |
| | • Require that each District formally adopt the ARB SOPs calibration spreadsheets, maintenance forms and technical bulletins. | The PQAO MOU is under development which will allow this to happen. |
| | • Require that each District notify Chief, AQSB when the relevant materials have been adopted for FRM and FEM devices, or that they do not conduct FRM/FEM air monitoring and periodically update their adoption list. | |
| | • Require that each District develop SOPs and other relevant documentation for FRM/FEM analyzers and samplers that are not operated by the ARB using the ARB's standardize SOP format. Districts will be requested to submit their SOPs, etc. to ARB for review and approval. Provide each staff person a copy of relevant SOP and ensure it is understood and followed. | This will be covered during the District TSA process and though the PQAO MOU. |
| | • Provide training annually (in Sacramento) on<br>o fundamentals of air monitoring,<br>o principles of calibration,<br>o station operation, and, | QA Module for 2011 will include TSA training. Training to be conducted in December 2011. A new topic will be discussed for |

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| | o instrument specific training, including data validation for that instrument (only for instruments operated by the ARB).<br>• Require the Districts to send staff to appropriate training (considering staff's duties) and that the District provide for staff's travel and per-diem expenses as appropriate.<br>• Initiate the Air Quality Data Action (AQDA) process in the ARB's Standard's Laboratory. This process will notify Districts when an instrument fails acceptance criteria for recertification. The AQDA will request an investigation of the problem from the client District.<br>• Retain up-to-date records on the source of certification of gas and flow standards for FRM and FEM instruments used by districts in the ARB PQAO. Records indicate there are few if any Districts that do not use the Standards Laboratory for criteria pollutant monitoring. QMB/QA staff will conduct a survey to determine the source and ensure NIST traceability is maintained for all FRM and FEM instruments operated by those in the ARB PQAO.<br>• The Air Quality Data Branch (AQDB) will require that Districts within the ARB PQAO, for which ARB does not submit data, make corrections caused by an AQDA in a timely manner in AQS. Further, the Districts will submit a copy of the EPA required annual certification documentation to the Air Quality Data Branch. | 2012 after this training.<br><br>This will be completed after the PQAO MOU is signed.<br><br>Completed.<br><br>This is being recorded though the annual performance audit, and the district TSA. Conducted a survey with districts in 2008, an updated survey will be conducted in 2012. This is being addressed in the PQAO MOU as well. |

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| | • the ARB designate a QA coordinator with responsibility for overseeing QA activities, convening QA working group meetings and reviewing and approving quality documents submitted by the air districts, MLD, and other ARB Divisions. Districts in the ARB PQAO should also designate QA points of contact. | Mike Miguel has been designated. |
| **M4-M5:** Special studies by both ARB and districts within the ARB PQAO are not always covered under the CARB QA program. | Institute a QA workgroup for the ARB PQAO. This workgroup, or the ARB PQAO QA Coordinator and EPA will work together to identify special projects that use EPA funding for data collection and ensure that all appropriate and required QA activities are being met. | ARB does not intend to initiate a QA workgroup. A QA element will be included in AMTAC and will cover PQAO elements. In regards to special projects, language has been included in the PQAO MOU. |
| **M6:** The ARB QA Manual does not fully meet EPA's QMP and QAPP requirements. | As part of the overall reinvigoration of the ARB QA program, the ARB will develop a schedule to update its QA documentation to meet EPA requirements. | QA staff are developing a combined QMP and QAPP at this time. |
| **M7:** Data are not validated using consistent procedures. | • Develop control-copied SOPs for the data validation and review/verification procedures in the AQSB, NLB, and AQDS.<br>• ARB should ensure that all local Districts having the responsibility for submitting data directly to AQS follow consistent procedures for reviewing and validating data before it is submitted to AQS. | |
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| **NM1:** The ARB annual network plan includes not only active monitoring sites but any monitoring site that collected air pollution data in the State of California since the early 1970's, whether still in operation or not. | Revise the format of the annual network plan to include a table that lists only the active monitoring stations. | |
| **NM2:** The Stockton MSA in the San Joaquin Valley Air Basin does not meet the minimum | The ARB or the San Joaquin Valley APCD needs to establish an additional $PM_{2.5}$ SLAMS | |

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| SLAMS monitoring requirements for $PM_{2.5}$. | monitoring site in the Stockton MSA. | |
| **NM3:** The Modesto MSA in the San Joaquin Valley Air Basin does not meet the minimum SLAMS monitoring requirements for $PM_{2.5}$. | The ARB or the San Joaquin Valley APCD needs to establish an additional $PM_{2.5}$ SLAMS monitoring site in the Modesto MSA. | |
| **NM4:** The Visalia-Porterville MSA in the San Joaquin Valley Air Basin does not meet the minimum SLAMS monitoring requirements for ozone. | The ARB or the San Joaquin Valley APCD needs to establish an additional ozone SLAMS monitoring site in the Visalia-Porterville MSA. | |
| **NM5:** Some information in the ARB State and Local Air Monitoring Network Plan, dated June 2007, does not agree with information in the EPA AQS database or with local district Annual Network Plans. | The ARB should ensure that the Annual Network Plans accurately reflect the availability of monitoring data, including which monitors are currently operational, and that there is agreement between the ARB and local districts as to the designation of sites. | |
| **NM6:** The ARB 2007 Network Plan is not complete with respect to GBUAPCD sites, monitoring objectives or monitoring scales. | The ARB should give local Districts the opportunity to review the information in the Annual Network plans to ensure site information is correct. | |
| **AQSB1:** Field operators do not always document shipping information on their sample report/tracking sheets. | Ensure that field operators are aware of the importance of documenting shipping information. | |
| **AQSB2:** Some ARB MLD monitoring SOPs are outdated and/or incomplete. | ARB should develop a schedule for updating all monitoring SOPs and ensure that the SOPs posted are complete and cover all instruments used in the ARB monitoring network. | |
| **AQSB3:** The use of correction fluid was noted on an MLD air monitoring form. | ARB personnel should follow appropriate procedures when making corrections to official documentation and records. | |
| **AQSB4:** ARB MLD does not calibrate monitoring equipment at all PQAO sites. | The corrective action for this finding is dependent on how the EPA, the ARB and the local Districts address the overall organization issues of the ARB PQAO (See Finding M1). | |
| **AQSB5:** Second level review of calibration | The ARB should institute a program of second | |

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| records and calculations is not routinely performed. | level review of calibration records. | |
| **AQSB6:** The lowest ozone calibration point is at a concentration that is above the 8-hour standard. | The ARB calibration program needs to ensure the performance of ozone instruments at levels at or lower than the ozone NAAQS. EPA suggests this be accomplished by using a lowest calibration point at or below 0.075 ppm. | |
| **AQSB7:** The calibration technician noted that only 2 gas phase titration points are used to verify the $NO_2$ calibration. | ARB MLD should include more evaluation points in the $NO_2$ gas phase titration. | |
| **AQSB8:** Maintenance and performance verification of zero air scrubbers used for calibrations is not documented. | The ARB should document the maintenance and performance verification of zero air scrubbers. | |
| **AQSB9:** The Special Purpose Monitoring Section should keep EPA informed of its monitoring projects. | | |
| **AQSB10:** The trees to the east of the Fresno 1st Street station building are about 15 meters from the inlet probe and PM manual instruments. | The ARB's plan to relocate this station to its proposed new site 375 meters to the east southeast will address this finding. | A new site has been selected and progress is being made to occupy the site. |
| **AQSB11:** At the Stockton-Hazelton monitoring station, a large tree to the south of the trailer is acting as an obstruction for the gaseous pollutant sample train inlet as well as to the $PM_{10}$ and $PM_{2.5}$ samplers. This site does not meet the probe siting criteria in 40 CFR 58, Appendix E. | Address siting issues by relocating PM samplers to the roof of the Health Department Building. Develop a plan to address the siting of the gaseous instrument inlet probe by either moving inlet probe (although this may not be an option since probe already appears to be as far away from tree as possible), moving the trailer farther from the tree, or by significantly trimming the tree so that it no longer obstructs air flow. | Efforts have been initiated to trim back the tree. Additionally, longer range plans include relocating the site at the same facility, but in an area away from obstacles. |
| **AQSB12:** The palm tree northwest of the Visalia monitoring station is within 10 meters of the inlet probe. | Perform an analysis of prevailing wind directions at the Visalia site to help evaluate the impact of the palm tree northwest of the inlet probe and manual samplers. | The palm tree was determined not to be an issue. |
| **NS6:** The most recent ARB site survey report for Grass Valley was not accurate. | ARB should review siting criteria and information on site survey report during audits. | District cut down the tree that was the greatest concern. A new siting map was created on June |

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| | | 24, 2011 and found that the site now meets CFR Appendix E siting criteria.<br><br>QA Auditors received hands-on training for siting criteria in January 2011 with US EPA and were provided with a copy of the revised CFR Appendix E for siting criteria. Annually, QA Auditors will verify the siting at each air monitoring station to determine compliance with CFR requirements. The District being audited will be notified with an AQDA for resolution. |
| **IL2:** Mass determination of $PM_{10}$ filters should include blank controls. | The MLD should include routine blank controls as a part of the $PM_{10}$ laboratory operations. | |
| **IL3:** Temperature and humidity measurements in the weigh rooms are logged on a paper chart and not formally analyzed to determine compliance with regulatory criteria. | MLD should look into upgrading the system for monitoring compliance with temperature and humidity requirement in the weigh rooms. | |
| **IL4:** The $PM_{10}$ laboratory has only recently begun to track verification of "working" mass standards in a logbook. | The $PM_{10}$ standard verification logbook should include information similar to that available in the $PM_{2.5}$ standard verification logbook. | |
| **IL5:** Several additional improvements could be made to the $PM_{2.5}$ weighing process. | Improvements could address minor issues such as:<br>• The $PM_{2.5}$ filter identification numbers that are embossed on each filter are not recorded.<br>• The start date and time for the beginning of pre-weigh conditioning of $PM_{2.5}$ filters was not documented.<br>• The laboratory staff was not aware of the new regulatory requirements for $PM_{2.5}$ monitoring. | |
| **IL8:** A local District stated that there was lack of | ARB should report filter results to the Districts | |

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| sufficient feedback from the ARB on result of PM filter analysis. See also Operations Finding #NS8. | as soon as possible when they indicate a problem or an exceedance. | |
| **OL1:** A second source quality control standard is not being analyzed as required by the method for Aldehydes/MEK (HPLC). Analysis of a second standard is being performed, but the standard is not prepared from a second standard source but rather is prepared as a dilution of the same standard solution that is used to prepare the working calibration standards. | The analysis of the control standard should be prepared from a second standard source. | |
| **OL2, OL6, and OL13:** Audit samples are not being analyzed in the organics lab for Aldehydes/MEK (HPLC), hexavalent chromium (IC), or oxygenated hydrocarbons or nitriles. | A program including the routine submission of audit samples should be implemented. Ideally, the audit samples should be submitted double blind to the laboratory to eliminate possible bias. Results of audit samples should be kept on control charts. EPA may be able to assist ARB in securing resources for an audit program. | QAS initiated an annual audit for Aldehydes/MEK(HPLC0 and hexavalent Chromium (provide spiked samples to laboratory for analysis). Unable to find a vendor to produce audit samples for oxygenated hydrocarbons or nitriles. |
| **OL3:** Field blanks are not being analyzed for the organics lab. Sample results are being corrected for background contamination based on an average background contamination of 0.3 µg/cartridge determined from a field blank study performed by MLD 15 years ago. It is the understanding of the audit team that field blanks have not been deployed for 15 years. | The practice of conducting field blank analysis on a routine basis should be initiated. | |
| **OL4:** The laboratory is not using an internal standard method of analysis as described by the method for Aldehydes/MEK (HPLC). The laboratory is currently using the external standard method of standardization. | The laboratory should use the internal standard method or evaluate the accuracy of its data generation process through audit samples with rigorous control ranges and consider changing to the internal standard methods based on the | |

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| | results. | |
| **OL5, OL7, OL12, and OL16:** Secondary review of instrument logbooks is not being documented for Aldehydes/MEK (HPLC), hexavalent chromium (IC), aromatic/halogenated hydrocarbons (GC/MS), or oxygenated hydrocarbons or nitriles. | It is recommended that a system of periodic review and documentation of review of instrument run log books be implemented and documented with initialing the instrument run logbook. | |
| **OL10:** Duplicate samples are being analyzed for GC/MS and presented as tabulated results in quarterly QA reports, but control charting is only occasionally performed. | The laboratory may also want to consider plotting duplicate results. | |
| **OL11 and OL18:** The GC/MS is not vented to outside the facility. | It is recommended that instrumentation be vented to outside the facility or to traps to reduce the possibility of inhalation of contaminated air by employees. | |
| **OL14:** The GC/MS Saturn D is a new instrument that was brought on-line in April, 2007. It is being used to generate data, but an MDL study has not been performed and documented. | Data should not be reported on instrument Saturn D until an MDL study has been performed and documented. | |
| **OL15:** The MLD 066 method is based on the TO-15 method, which describes an internal standard method of calibration. The laboratory is using an external method of standardization; internal standards are not being used. | It is recommended that the laboratory assess the accuracy of data generated by the use of audit samples with defined quality control limits. | |
| **OL17:** Mass calibration is performed using perfluorotributylamine (FC -43), but confirmation that tuning abundance criteria have been met is not being verified through the analysis of 1-bromo-4fluorobenzene (BFB). It is the understanding of the audit team that tentatively identified compounds are not routinely being reported with this method. | The FC-43 method of tuning should be acceptable as long as tentatively identified compounds (TICs) are not reported. It is recommended the SOP be revised to reflect that a BFB tune will be performed for special events where TICs are reported. | |
| **OL19:** Laboratory staff stated that canisters are randomly selected for certification testing. The staff does not consider which canisters had the highest | ARB should consider other options to ensure that all canisters go through the certification process, such as tracking the canisters, or, | |

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| concentrations of contaminants in deciding which canister in a batch to test for cleanliness certification. | alternatively, select the canisters with the highest prior sample concentrations for certification. | |
| **OL20:** Canisters are not vented in hoods and are vented to ambient air. | Unused sample in canisters should be released in a hood. | |
| **OL21:** The laboratory has not established a retention time for canisters after they have been certified. The laboratory relies on the canister pressure gauge reading as an indication the canisters have not lost vacuum. | The laboratory should establish a retention time policy for clean canisters after which they will be re-cleaned and certified as an added quality assurance measure. A retention time of 30 days would be reasonable. Alternatively, it is recommended that language be included in the Quality Assurance Plan that all canisters are used and recycled within 30 days, if this reflects workload demand. | |
| **DM1, DM2, and DM3:** The data validation and review/verification procedures for the AQSB, NLB, and AQDS are not formally published in a control-copied SOP. | Develop control-copied SOPs for the data validation and review/verification procedures in the AQSB, NLB, and AQDS. | |
| **DM4:** EPA was not given access to special projects data management activities to review. It is not clear that QA procedures are being applied to all projects receiving federal funding. | EPA should be given access to review data validation and verification procedures for special purpose monitoring projects. | |
| **DM5:** The AQDS does not ensure that local District data are validated prior to upload to AQS. | ARB should ensure that all local Districts having the responsibility for submitting data directly to AQS follow consistent procedures for reviewing and validating data before it is submitted to AQS. | |
| **DM6:** Ambient monitoring data submitted to the AQS database by the ARB PQAO is not being certified annually. | All data changes and certification should take place consistent with deadlines established in Part 58.15. | |
| **DM9:** Valid concentration data for the Yreka $PM_{2.5}$ monitor (AQS# 06-093-2001) have not been submitted to the AQS database since December | The ARB should work with the Siskiyou County APCD to determine the reason for the poor data capture at this monitoring site and implement | Yreka has reported $PM_{2.5}$ (88101) data from August 2008 to present. |

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| 2006. | appropriate corrective actions to ensure a data capture rate of at least 75%. | |
| **DM10:** The AQS database identifies the Siskiyou County APCD as its own PQAO. | The ARB should work with EPA to ensure that the monitors in the ARB PQAO are correctly identified in the AQS database. | AQS corrected. Currently shows Siskiyou APCD under ARB PQAO. |
| **DM11:** The Lakeport $PM_{10}$ site has not reported $PM_{10}$ data correctly to AQS since March 2001. | The ARB PQAO should ensure that $PM_{10}$ data are submitted to the AQS database under the appropriate parameter codes. The ARB should review the $PM_{10}$ data from the Lakeport monitoring site to determine if $PM_{10}$ data at local conditions were correctly submitted to the AQS database. If this is not the case, the $PM_{10}$ concentrations will need to be recalculated according to the procedures in 40 CFR 50, Appendix J and resubmitted to AQS under the correct parameter code. Alternatively, the data in AQS may already have been corrected to Standard Temperature and Pressure and simply incorrectly submitted under the wrong AQS parameter code. | Pheng Lee confirmed 85101 has been reporting to AQS as POC2 ($PM_{10}$). The district thinks POC1 was used for 88101 a $PM_{2.5}$. 85101 is for local conditions and not subject to CFR. |
| **QM1:** The MLD does not have central, independent authority in the organization to provide direction and recommendations to the data collection, production, and verification programs. | Empower a central, independent quality management authority coordinated within MLD to work in the PQAO (ARB and Districts) to ensure the production of quality data. Its role should be to establish a unified, structured, comprehensive QA program in the ARB that includes overseeing (approving) the QA/QC activities conducted in the field, information management, and laboratory operations. | ARB agrees that there is not an independent quality management authority. The QAS manager has begun to work with U.S. EPA Region 9 to determine specific QA functions that can be performed with existing resources and staff to provide more oversight of QA/QC activities. QAS has started to review precision data on a quarterly basis and has begun to conduct District TSAs. Also has initiated review of some of the districts SOPs. |
| **QM2:** Training, while in place for the ARB MLD, does not necessarily extend to all staff and the ARB | The ARB should ensure that the AQSB and QAS coordinate their training programs. One way to | The Air Quality Surveillance Branch (AQSB) is developing a |

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| PQAO Districts. See also Finding M1. | achieve this is to develop a centrally administered training program that includes both operations and QA activities. | Training Program designed to emphasize the key fundamentals of all aspects of ambient air monitoring. The program will be provided in four distinct modules. A QA module has been developed for 2011. The topic is Technical System Audits. The training will be conducted in Sacramento and El Monte in December 2011. A training webpage has also been created. QAS has started to brainstorm QA topics for 2012. Under consideration are data corrective action (validation procedures) and siting. |
| **QM3:** Some Districts do not have a central, independent, dedicated quality assurance manager/officer responsible for communicating and ensuring that quality assurance activities are carried out in field operations and information management. | The ARB needs to perform an evaluation of District QA management activities. Some Districts, such as Great Basin Unified APCD, perform their own QA management activities and would require only periodic assessments to ensure they continue to meet the ARB and EPA QA requirements. Other Districts programs will need the ARB to play a more active role in QA management. | QAS has begun to conduct District TSAs. This will also be addressed in the PQAO MOU. |
| **QA1:** The QAS does not assure that sites that fail performance audits are re-tested after a corrective action is implemented. | The QAS should establish criteria for retesting based on the need for the data and/or develop an alternative to sending the audit trailer based system to retest sites. | After the EPA TSA was conducted, QAS began to initiate re-audits. Every effort is made to re-audit after corrective action has been taken. |
| **QA2:** The QAS has experienced a high staff turnover in recent years, which has impacted the level of institutional knowledge in the section and impacted its ability to perform audits. | The ARB MLD needs to develop a plan to reduce turnover in QA audit staff and/or attract more senior staff to the QA Section. | QAS on an annual basis has consistently conducted 100% of the audits of districts in ARB's PQAO per CFR requirements. The only exception is the sites that QAS has identified and reported to U.S. EPA as inaccessible. In 2006, due to |

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| | | staffing limitations, audits in the South Coast were not conducted. South Coast is its own PQAO. QAS is only responsible for conducting audits one time at each site in a five year period; however, audits are typically conducted every year in the South Coast.<br><br>A robust training program has been initiated for the auditors to ensure specific performance standards are met and that the audit procedures are done in conformance with CFR and ARB requirements. The QAS manager also conducts field evaluations of auditors to ensure adherence to procedures. An auditor training handbook has been developed. |
| **QA3:** System audits of local Districts by QAS and the Stationary Source Division are only conducted by request or on an as needed basis. | Future system audits should be performed as identified on the ARB-MLD's website cited above. The audits should be inclusive of both program and QA activities reviewed and conducted using ARB-MLD's Audit procedures contained in Volume V, Appendix AH3.0, System Audit Procedures for Ambient Air Monitoring Programs, August 2002. | QAS has established a proposed schedule for conducting appropriate TSAs of the local districts within ARB's PQAO. Volume V, Appendix AH will also be modified to delete "annual." It would be unrealistic for ARB to conduct an annual review of each of the 22 districts with air monitoring programs on an annual basis. Currently Two TSA's are in progress for Placer Co. and Northern Sonoma. Monterey was completed in 2011. |
| **QA4:** ARB MLD does not perform routine audits of data quality. | ARB should develop a schedule and procedure for conducting audits of data quality. | The QAS manager will work with the data groups to develop a schedule and procedure for conducting audits of data quality. The ARB PQAO districts will be |

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| | | encouraged to adopt data validation and data review procedures to ensure data quality of district produced data as part of the PQAO MOU. |
| **QA5:** Internal audits are not conducted on ARB-MLD's and Districts data management, reduction and review process. | Internal audits should be conducted as soon as possible, and on a scheduled frequency. SOPs should be developed for conducting internal audits of ARB-MLD's and Districts data management, reduction and review process. | QAS will incorporate audits of data management, reduction, and review as part of the full technical system audit. See response to QA3. |
| **QA6:** The ARB's MLD does not routinely conduct monthly (day-to-day) checks of all the precision and accuracy of data being uploaded by the local Districts to the AQS database. | As the primary quality assurance organization, the ARB-MLD, should develop SOPs to include day-to-day check routines for District-produced data. It is further recommended that standard operating procedures be developed for performing these precision and accuracy checks on a monthly basis. | QAS conducts quarterly reviews of precision and accuracy data being uploaded to AQS. Districts within ARB's PQAO will be requested to adopt ARB's SOP for data validation or to develop their own SOP that is approved by ARB (included in PQAO MOU). The ARB SOP is in progress. |
| **QA7:** The ARB Reporting Organization (RO) is not able to access the AQS accounts of Districts that are part of the ARB PQAO but serve as their own RO for the purposes of uploading data to the EPA AQS database. | Over the short term, ARB should work with the ROs in the ARB PQAO to facilitate obtaining access. Over the long term, EPA Region 9 can work with OAQPS to develop AQS access procedures, consistent with data quality objectives, for PQAO's with multiple ROs. | ARB now as access to the screening groups to upload data. The only exception is the National Park Services. Accuracy data is sent to NPS for upload. |
| **SL1:** There is no procedure in place to notify Quality Assurance or Field Audit staff of failure, i.e., the potential that data from the period prior to the current calibration check might be rejected if transfer and flow standards fail calibration. | A reporting mechanism should be developed to communicate calibration/verification failures to Quality Assurance and Field Audit staff. Similarly QAS should develop procedures as to how to evaluate and address data produced prior to the determination of failure. | The AQDA process has been incorporated into the Standards Laboratory procedures. If an instrument fails the Laboratory's established criteria, an AQDA is issued to the District requesting that the data be investigated. QA staff conducted and completed the survey on traceability and has determined that the districts are NIST traceable for all FRM and FEM instruments operated by the |

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| | | districts in the ARB PQAO. |
| **SL2:** The thermometer in the Standards Laboratory needs to be verified with another NIST traceable standard. | Verify the thermometer against a NIST traceable standard on an annual basis when other instrumentation is recertified or recalibrated. | A Fuke Temp. well was purchased in January 2008 and all thermometers are compared against a NIST traceable standard. |
| **SL3:** There is insufficient documentation in logbook entries in the ozone Standards Laboratory. | Complete and full descriptions of what was performed, by whom, when, etc. should be documented in log books or log sheets. | As a result of the TSA, a maintenance logbook is now maintained for the SRP, and log sheets have been updated to accommodate the required information. |
| **SL4:** Calibration of the primary flow standards brought in by ARB staff or District does not always occur on an annual basis. There is no tracking by the Standard Laboratory to ensure District or ARB flow standards are annually recertified. | ARB Field staff and Districts need to become more familiar with 40 CFR Part 50 recert/recal requirements. This step should be included in a Standard Operating Procedure (SOP) for calibrations to ensure that they are performed on an annual or more frequent basis (when deviations occur before scheduled recalibration). A method for tracking the submission of flow standards for recertification and calibration should be developed to ensure the standards are recertified on a regular basis or recalibrated if necessary. | Annually, the QA Auditors collect the type of standards used at each air monitoring station. This information is collected on the audit worksheets and then transferred to the site survey. The site survey is included in the audit report that is provided to the site operator and subsequently posted on the Internet.<br><br>In addition, ARB's Standards Laboratory tracks the standards sent to ARB for certification, calibration, and verification |
| **SL5:** Manometers were not calibrated separately from transfer standards. | All manometers should be calibrated separately. | Manometers are now calibrated separately. |
| **SL6:** The control charts for Hi Vol flow standard was above two standard deviations from September 2005 and reached three standard deviations in January 2006 before corrective measures were taken to bring the situation back into control. | Continue to produce control charts to self assess and monitor performance. When charts show controls at 2 standard deviations, checks should be performed to correct the problem. | Control charts are maintained and verified by the operator. |
| **SL7:** The Standards Lab's High Volume Orifice Calibration Work Sheet is not always filled out | All Standard Laboratory worksheet entries should be completed, including identification of | Form was updated and now filled out completely. |

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| completely. As per the logbooks, the person performing calibrations for the ozone standards does not sign her/his name. | the party making the entries. | |
| **SL8:** Calibration records from DH Instruments, Inc. are not always opened upon receipt. | Open and review calibration results from DH Instruments. Develop procedures to issue data impact notices, as appropriate. | |
| **SL9:** The Standard Laboratory does not maintain calibration verification records it performed on instruments recalibrated by DH Instruments. | Verification of calibration should be performed and records maintained. | Calibration documents are now maintained in clear sleeves above the DH instruments. |
| **SL10:** There is no backup to the stand alone DBASE database server that maintains records from results of calibrations performed at District and ARB-MLD sites. | A back-up system should to be developed and standard operating procedures (SOPs) developed to implement it. While the backup system can be maintained on site, it is preferred that it be off-site in a secure, safe location, potentially in ADAM. | A tape back up system is maintained nightly. Tapes are in a secure building on site. |
| **SL11:** Hard copy records of changes made to DBASE electronic data (see comment SL10 above) are not easily accessible. | Any changes to electronic data should kept in a bound logbook and traceable to the hard copy data e.g., with a serial number or date of analyses and project. | Changes are noted within the database using a header. |
| **OPA1:** OPA's QA audit role in the organization is underutilized and could be more effective. | Expand OPA's authority to include self assessments of the QMB and its effectiveness e.g., data production (field and lab), data handling and management activities within the QMB, performance audits conducted by the ARB, and Standards Laboratory calibration activities, as these areas are critical for ensuring the quality of ARB-MLD and Districts data. | OPAS and MLD laboratory managers are engaging in regular meetings to discuss the current laboratory QC report development and review process. The goal is to modify the current arrangement that will lead to a more efficient and productive process. OPAS will continue to review the data generated by the labs and offer constructive criticism consistent with best laboratory practices so that the data produced is defensible and consistent with the standard operating procedures and QA Manual. |

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| **OPA2:** Special Purpose Monitoring (SPM) projects are not implemented under a Quality Assurance Project Plan (QAPP), but there is a protocol developed specifically for the SPM. | The SPM protocols should be developed that addresses all the elements of a QAPP, including sample collection and handling. A crosswalk should be developed linking the SPM protocol to the QAPP element to which it corresponds to ensure all elements covered. | OPAS currently develops a monitoring protocol that spells out, among other things, all data quality objectives of the special, non-routine study and how those objectives will be met. After completion of the study, an assessment is then performed to determine if the data quality objectives were met. We agree with the finding that our protocols are consistent with what is contained in a QAPP. However, for future special projects, OPAS will consider the development of a formal QAPP. |